

**The Longitudinal Development of Language Attitudes Toward Spanish and Catalan  
during the Transition from Primary to Secondary School**

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## **The Longitudinal Development of Language Attitudes Toward Spanish and Catalan during the Transition from Primary to Secondary School**

### **Abstract**

This study investigates the longitudinal development of language attitudes toward Catalan and Spanish over a five-year period in the transition from primary to secondary education of a sample (N = 1,143) of students in Catalonia and Aragon. Two research questions were investigated: 1) How do language attitudes develop over time? and 2) How do individual and environmental variables contribute to the longitudinal development of language attitudes? The results from a sociolinguistic questionnaire showed that the participants demonstrated positive (for Catalan) and neutral (for Spanish) language attitudes. Regarding their longitudinal development, the findings indicate that the attitudes toward Catalan developed from positive to neutral. These attitudes developed significantly during the transition from primary to secondary and within secondary. Attitudes toward Spanish stayed neutral but significantly decreased over time between primary and secondary education. Results from longitudinal mixed models showed that the variables that accounted the most for attitude differences were environmental, which included the language used in the participant's social network, at home, and with peers. These results are discussed in relation to the development of language attitudes and the impact of individual and environmental factors.

*Keywords:* language attitudes, social psychology, Catalan sociolinguistics, longitudinal studies

### **Research on Language Attitudes in Catalonia, Spain**

The study of language attitudes is centered on the evaluative reactions to language; that is, “the social meanings people assign to language and its users” (Dragojevic et al., 2021, pp. 60-61). Such reactions are based on cognition, affect, and behavior in language use. In their review of 40 years of research on social psychology, Giles et al. (2021) showed that research on language attitudes has continued to be of researchers’ interest and that it encompasses the interconnection of several research lines: documentation, development, explanation, consequences, and change. The current study focuses on the documentation and development lines, as it documents the language attitudes of youth in Catalonia toward two of the official languages of the area (Catalan and Spanish, Aranese excluded) and focuses on their longitudinal development from the age of 11 to 15 years in the participants’ transition from elementary to secondary education.

Language attitudes are not static but rather they are dynamic as they may develop and change with time. In his seminal work, Baker (1992) remarked on the determinants of language attitudes and their potential evolution with time (a period of 2 years in Baker, 1992). The possible determinants were six: age, gender, educational context in which language attitudes develop and change, language ability, language background (e.g., language use with family and friends), and youth culture (e.g., watching television, participating in youth clubs, etc.). Baker (1992) posited a model that investigated the interrelationships of these variables to account for attitude toward Welsh by 797 secondary school youth in Wales (aged 11-14 at Time 1, 13-16 at Time 2) and the impact of time. The results showed that attitudes were mostly favorable toward Welsh and, most relevant for the current study, attitude to Welsh declined with age (at age 14) and “attitude appears more strongly connected with the ‘environmental’ variables than individual attributes. Language background and

youth culture appear more strongly correlated to language attitude than gender, age and ability” (Baker, 1992, p. 68) (see Morris, 2014 for the impact of language use and youth culture on attitudes to Welsh). The current study further expands on the findings of Baker (1992) by a) investigating the interplay of language attitudes toward Catalan and Spanish of students in Catalonia in a longer time period (5 years), which includes the transition from primary to secondary school, and b) the impact of individual and environmental variables.

Language attitude studies in Spain have investigated the interplay of individual and environmental variables and, to a much lesser extent, how they evolve longitudinally. The study of language attitudes in Spain is an active area of sociolinguistic research, because in the 1970s-1980s, after forty years of dictatorship (1939-1975), specific multilingual education systems were implemented across Spain, which gave a prominent role to Catalan, Basque, and Galician as languages of instruction in compulsory education in the respective areas where these languages are spoken (see Lasagabaster & Ramallo, 2017 for specific details for each region). The use of languages at school in Catalonia is ruled by the Education Law enacted since 2009, which is based on the 1998 Language Policy Law. The Education Law states the following regarding language use at schools (Articles 10 and 11; translation by the authors of the article):

School curricula must guarantee full command of the official languages, Catalan and Spanish, at the end of compulsory education... Students who join the education system without knowing one of the two official languages have the right to receive specific linguistic support. (Article 10)

Catalan, as Catalonia's own language, is the language normally used as a vehicular and learning language of the educational system. Educational activities, both oral and written, the didactic material and textbooks, as well as assessment activities for

curriculum areas, subjects and modules, have to be normally in Catalan, except in the case of subjects of Spanish language and literature and of foreign languages...

Students cannot be separated into schools or different classrooms because of their usual language. (Article 11)

The implementation of the 2009 Education Law means that in the case of Catalonia the so-called *vehicular* language of instruction at all levels of compulsory education (infant, elementary, and secondary) is Catalan, except for a few weekly hours of Spanish and English (or other foreign languages) in the specific language classes (e.g., all children in Catalan schools learn to read and write and do math in Catalan; see Arnau & Vila, 2013; Generalitat de Catalunya, 2018 for details). The fact that there is a law that rules language use at Catalan schools does not guarantee that it is enforced uniformly or that it is followed everywhere; hence, the current debate regarding the implementation of the law and language practices at schools in Catalonia (Bretxa, Comajoan-Colomé, & Vila, 2017; Consell Escolar de Catalunya, 2022).

Whereas the implementation of immersion programs in Catalonia in the 1980s was based on the consensus of parents, government officials, and teachers, such consensus progressively eroded as the education system of Catalonia and the Catalan linguistic landscape became more complex, particularly with the influx of immigration from Northern Africa and Latin America beginning in the early 2000s (Authors; Arnau & Vila, 2013). In a few decades, the student population of the Catalan education system went from being mostly monolingual (Catalan or Spanish) to plurilingual, with an increase of the presence of languages present in the classroom and varying levels of competence in Catalan and Spanish. In this sense, Catalan schools are a testing ground for the sociolinguistic study of language attitudes and their connection to schooling in order to investigate how attitudes develop and

are connected to individual and environmental characteristics, which is the focus of the current study.

Lasagabaster (2014) reviewed the research on language attitudes in the co-official languages of Spain (Spanish, Basque, Catalan, and Galician) and provided evidence for the following four trends: a) the school system is an important variable in promoting positive language attitudes (Lasagabaster, 2014, 2017), b) a predictor of language attitude is the language spoken at home, c) minority language speakers may feel threatened by the use of other majorly spoken languages, and they tend to display more positive attitudes toward their own language compared to the majority one, and d) attitudes by immigrant-origin youth are mostly positive toward Spanish due to its official status prestige across Spain, whereas they tend to be less positive toward the other languages (Catalan, Galician, or Basque), particularly by students of Latin American origin because most of them have Spanish as their first language.

More specifically, in Catalan sociolinguistics, early research interest in attitudes was motivated by the fact that there was a shift in Catalan sociolinguistics in the 1980s and 1990s from the original focus on the variables that affect the *knowledge* of Catalan and Spanish of the general population to the variables that affect the *use* of the two languages. In this respect, language attitude was considered a major influence on how speakers, irrespective of their knowledge of the languages, put them to use in the Catalan multilingual environment. Early research on language attitudes of youth in Catalonia documented the impact of changes in the official status of languages due to the implementation of language policies in the transition to democracy (the 1980s) and the (high) status of Catalan (Alsina et al., 1983; Boix 1993; Woolard, 1989; 1992; 2009; 2011).

Alsina et al. (1983) was the first study to include language attitudes as a variable to investigate the impact of the introduction of Catalan as the language of instruction in Catalan

schools. They investigated the language attitudes of a sample of 1,539 students in 4<sup>th</sup> grade (age 10) in the 1981-1982 academic year and found that the average attitude toward Catalan (7.74, in a range from -10.00 to +10.00) was higher than the attitude toward Spanish (3.94) and that the environmental factors were determining in accounting for the differences. For Catalan attitudes, the most determining factors for language attitude were the presence of Catalan in the students' classroom (measured as the percentage of students with Catalan as L1) and the geographical area of Catalonia where the school was located. The more presence of Catalan in the classroom and in the area, the higher the attitude toward Catalan. Regarding attitudes toward Spanish, the most determining factors were the overall presence of Spanish in the environment (inside and outside school) and the geographical area. The higher the presence of Spanish inside and outside school, the higher the attitude toward Spanish. The impact of geographical area was the reverse than that for Catalan attitudes: the highest attitudes toward Spanish were found in the areas with the highest percentage of Catalan speakers, suggesting that in contexts where the participants' language was a minority it was more likely to have polarized attitudes, whereas in contexts where the participants' language was the majority there was not as much a situation of language conflict and thus attitudes were less polarized (Alsina et al., 1983, p. 87).

Woolard's (2009; 2011) studies are particularly relevant to the current study because they investigate attitude development by youth in Catalonia from a temporal perspective. Woolard (2009) investigated a group of 14-year-olds (N = 33) when they were in a high school in the Barcelona metropolitan area in 2006-2007 and she compared her findings to the ethnographic study she carried out in the same school twenty years earlier, in 1987. She compared the findings (match guise technique, interviews, and class discussions) to different cohorts of students of the same age groups and found that language attitudes toward Catalan had shown a positive shift. Furthermore, whereas in 1987 participants often referred to

“Catalans” and “Castilians” as two distinct groups (defined by their first language and connections to identity), this was not the case in 2007. In a second study, Woolard (2011) interviewed 36 adolescents (aged 14) who were in high school in 1987, and twenty years later, she reinterviewed twelve of those. Her findings showed that over the 20-year period, most of the participants became Catalan language users; that is, their bilingual repertoire had considerably grown after high school and they self-identified more as Catalan compared to their younger years. The trigger for such a change appeared to be connected to differences in how adolescents and adults constructed self and social identity (Woolard, 2011). In sum, both studies by Woolard point to the importance of the adolescence period in the shaping of attitudes and an improvement of attitudes toward Catalan. Finally, Newman et al. (2008) contrasted data from two previous studies containing data collected in 1980 (Woolard, 1984; 1989) and 1987 (Woolard & Gahng, 1990) with their own data from 2005 with adolescents (N = 347, secondary school participants, age not specified). The results from a matched guise experiment showed that differences in attitude toward both Catalan and Spanish over time diminished and that bilingual proficiency was highly valued.

With the demographic changes at the beginning of the 21<sup>st</sup> century in Spain and the new wave of immigration to Catalonia, there was an increase in the research on language attitudes among school populations to investigate the impact of schooling in Catalan on the development of attitudes (Huguet & Janés, 2008; Ianos et al., 2017; Ianos et al., 2017; Lapresta et al., 2020; Ubalde et al., 2017). Madariaga et al. (2016) conducted a cross-sectional study with participants in similar age groups as the current study (N = 1,206 second- and fourth-year secondary school students in Catalonia, ages 13–14 and 15–16, respectively; including 673 autochthonous students and 533 of immigrant origin) and found that language attitudes toward Catalan, Spanish, English, and the participants’ L1 (for those who did not have Catalan or Spanish as their L1) were mostly favorable. In the



autochthonous group, more participants had a favorable attitude toward Catalan than toward the other languages. In contrast, in the immigrant group, most participants had a more positive attitude toward Spanish. Regarding the development of attitudes, an increase in favorable attitudes toward Catalan, Spanish, and English and a decrease in favorable attitudes toward the other first languages (e.g., Afro-asiatic languages) were reported from the second to the fourth year of secondary education.

Longitudinal studies, including those that examine language attitudes, are scarce, expensive, and cumbersome, because participants need to be identified and tracked for an extended period. However, longitudinal studies provide valuable data because the data collected from the same sample across different moments of time allows for the study of how one variable develops in real-time. Woolard (2009) and Newman et al. (2008) investigated the development of attitudes over time, but they are not considered longitudinal because the participants were not the same in the different periods of time under investigation. The current study is longitudinal and tracks language attitudes at three different periods of time with the same participants in the three periods. Two other studies have investigated the longitudinal development of language attitudes in the primary and secondary school population of Catalonia. Ianos et al. (2017) investigated the language attitudes of 72 secondary school students of immigrant origin (ages 13-15, most from Latin America or Africa) when they were in the second and fourth year of secondary school in Catalonia. The authors found an improvement in the attitudes toward Catalan, whereas those toward Spanish remained stable. However, the overall attitudes toward Spanish were more positive than those toward Catalan. When they investigated the determinants of attitude development, including the variables of gender, place of birth, the socio-professional status of parents, length of residence, use of Catalan and Spanish, use of L1, and self-identification with Spain, Catalonia, or area of origin, they found no statistical differences. Only the area of origin was

reported to have an impact on attitude development: attitudes of students from Africa towards the Catalan language improved in the two-year period, whereas their attitude toward Spanish or English declined.

Ubalde et al. (2017) carried out a longitudinal study using the same database chosen for the current study, which contains data from more than 1,000 participants at three different points in time (last year of primary school, age 11–12; first year of secondary school, age 12–13; and last year of secondary school, age 15–16) who answered an on-site questionnaire. Their results showed that, in general, the attitudes toward Catalan and Spanish were positive, with a trend to decrease in time and Catalan attitudes to be higher than those toward Spanish. Furthermore, the positive attitudes toward Catalan decreased more with time than positive attitudes toward Spanish when students moved from primary to secondary education. The results of a cluster analysis revealed three different groups of participants based on the development of their language attitudes. Group 1 displayed positive attitudes toward both Catalan and Spanish throughout the study duration (time periods 1, 2, and 3). The participants in Group 2 had higher attitude values for Catalan than for Spanish from the start; their attitude toward Catalan remained stable, whereas their attitude toward Spanish declined in the transition from primary to secondary school (from time period 1 to time period 2). The third group was similar to the second one but with a reversal in the trend: the participants' attitude toward Spanish was higher from the start and remained stable, whereas their attitude toward Catalan decreased. The focus of Ubalde et al.'s (2017) study was how attitude shaped different patterns of integration into society, and language use by the participants was not examined. As far as sociolinguistic environment, Ubalde et al. (2017) examined everyday contact of the participants with their L1 or L2, and participants were classified into one of the two categories: Metropolitan Region of Barcelona or rest of Catalonia (it is unclear if the classification was based on the participants' place of birth or the location of the school).

Following this definition, everyday contact was not a significant factor in the development of attitudes in Ubalde et al.'s (2017) study.

As can be gathered from the review of the literature, cross-sectional and longitudinal research on language attitudes toward Catalan and Spanish in the youth population in Catalonia has investigated several variables and their connection to language attitudes, such as L1, home language, age of arrival, and immigrant vs. nonimmigrant status. However, previous research has not focused on how language use (at home, in the participants' social networks, and with their peers) may have an impact on the longitudinal development of language attitudes of Catalan youth. In this respect, the current study complements that of Ubalde et al. (2017), because it uses the same database but it adds a number of variables of language use (e.g., at home, with peers, and classmates) that were not used in their study and investigates how individual and environmental sociolinguistic variables interact instead of focusing on profiles of linguistic acculturation. Thus, this study attempts to answer the following two research questions:

1. How do language attitudes toward Catalan and Spanish develop over time (a five-year period)? More specifically, how do they develop in the transition from primary to secondary school and within secondary school?
2. How do individual and environmental variables contribute to the longitudinal development of language attitudes toward Catalan and Spanish?

## **Method**

### **Participants**

The data for this study comes from a large nationally-funded sociolinguistic project that investigated the longitudinal development of students' language use, attitude, and self-confidence at three moments in time: last year of primary education (6<sup>th</sup> year in the Catalan education system, age 11–12) (Time 1), the first year of secondary education (age: 12–13)

(Time 2), and the fourth and last year of secondary education (age: 15–16) (Time 3) (see Authors, 2013 and Authors, 2016 for a summary of the project and data collection materials). The reason for the asymmetry in the periods of time under study (one year between Time 1 and 2, three years between Time 2 and 3) was to examine attitudes in the transition from primary to secondary education (Time 1 and Time 2) and between the beginning of secondary education and the end of it (Time 2 and Time 3).

For data collection, the schools and high schools were contacted with the assistance of the Department of Education of the Catalan and Aragonese governments. The data collection was initiated in 2007–2008 (Time 1) and continued in the following years, 2009–2010 (Time 2) and 2011–2012 (Time 3).

There were 2,598 participants at Time 1; 2,726 at Time 2; and 2,050 at Time 3. Participant attrition in this study was common due to the extended length of the study period (5 years) and the mobility of some of the student participants. Data from the same participants for all three moments of time along the five-year period were obtained for 1,143 of the participants, which constitute the data pool for the current study. The total number of participants for each time period slightly varied in the data analyses (e.g., Table 1, Figure 1), because some participants did not provide specific data.

In this study, there were more female participants (53.8%) than male participants (46.2%). As far as the participants' L1, the largest percentages had Catalan (42%) or Spanish (35%) as their L1, followed by those who declared that both Catalan and Spanish were their L1s (17%) and those who had a different language (e.g., Arabic) or combinations of languages as their L1 (7%). A majority of the participants in the study were born in a Catalan-speaking territory (mostly, Catalonia) (89.8%), whereas the remainder (11.2%) were born outside of Spain (Table 1). Regarding the participants' family origin, most of them had

parents born in a Catalan-speaking territory (CST) (78.9%), whereas approximately 10% had parents born in the rest of Spain, and 10% had parents born outside of Spain (Table 1).

**Table 1***Family Origin of the Participants in the Study*

Family origin of the participants		
Origin of the participants' parents	Participants' place of birth	
	In a Catalan-speaking territory	Outside a Catalan-speaking territory
Parents born in a CST		
2 parents born in a CST	611	7
Only 1 parent, born in a CST	5	0
1 parent was born in a CST and 1 born in Spain	233	4
1 parent was born in a CST and 1 outside Spain	39	3
Total Parents born in a CST (n = 902, 78.9%)	888	14
Parents born in the rest of Spain		
2 parents were born in the rest of Spain	84	0
1 parent was born in the rest of Spain and 1 outside Spain	16	0
Only 1 parent, born in the rest of Spain	2	0
2 parents were born in the rest of Spain	0	7
1 parent was born in the rest of Spain and 1 outside Spain	0	2
Only 1 parent, born in the rest of Spain	0	1
Total Parents born in the rest of Spain (n = 112, 9.2%)	102	10
Parents born outside Spain		
2 parents born outside Spain	36	0
Only 1 parent was born outside of Spain	0	0
2 parents born outside Spain	0	92
Only one parent, born outside Spain	0	1
Total Parents born outside Spain (n = 129, 11.3%)	36	93
Total	1,026 (89.8%)	117 (11.2%)

Note. CST = Catalan-speaking territory within Spain (i.e., Catalonia, Valencia, Balearic Islands, and Catalan-speaking Aragon)

The participants were from different Catalan-speaking geographical areas (Appendix A): a large city in the Barcelona metropolitan area (Mataró, 54.9%), two medium-sized towns in the Barcelona metropolitan area (Sant Joan Despí, 11.0%; and Sant Just Desvern, 7.8%), a medium-sized town in the interior of Catalonia (Manlleu, 9.3%), and two rural areas. One of

the rural areas (La Noguera, 8.7%) was located in Western Catalonia and had participants who attended schools and high schools in 8 towns/villages. The second rural area considered for the study comprised 13 towns in Aragon in the so-called *Franja d'Aragó* (Fringe of Aragon, 8.3%). Spanish is the predominant language in Sant Joan Despí within the Barcelona metropolitan area, whereas Mataró and Sant Just Desvern are mostly bilingual (Catalan and Spanish). Catalan is the predominant language in the Manlleu and Noguera areas, whereas the *Franja* area is mostly bilingual (Appendix A). The *Franja d'Aragó* area can be characterized sociolinguistically as more distinct from the others, because it is located in a Spanish region that has not implemented as many languages and educational policies in favor of Catalan as Catalonia. Whereas in Catalonia, Catalan is one of the official languages and the main language of instruction for education (ages 6-16) as mandated by the Education Law of 2009, in the *Franja* area Catalan is not official and the main language of instruction is Spanish (Catalan being offered as a school subject) (see Arnau & Vila, 2013, and Vila et al., 2017 for a review of sociolinguistic characteristics and language policies in each of the Catalan-speaking areas).

### **Instrument for data collection: Sociolinguistic questionnaire**

The data were collected via an anonymous pen-and-pencil questionnaire designed as a part of a larger project that investigated the longitudinal development of several sociolinguistic variables, including language attitudes. The current study analyzes the data from the language attitude section of the questionnaire and individual and environmental sociolinguistic variables (Table 2).

### **Table 2**

*Individual and Environmental Sociolinguistic Variables*

A. Individual variables	
Variable	Coding
Gender	<ul style="list-style-type: none"> <li>• Male</li> <li>• Female</li> </ul>
Place of birth	<ul style="list-style-type: none"> <li>• Catalan-speaking territory</li> <li>• Outside Catalan-speaking territory</li> </ul>
Origin of parents	<ul style="list-style-type: none"> <li>• Both were born in a Catalan-speaking territory</li> <li>• Both were born in Spain but not in a Catalan-speaking territory</li> <li>• Both were born outside of Spain</li> <li>• Other combinations of origin of parents</li> </ul>
L1	<ul style="list-style-type: none"> <li>• Catalan</li> <li>• Catalan and Spanish</li> <li>• Spanish</li> <li>• Other languages or combinations of languages</li> </ul>
Mother's education	<ul style="list-style-type: none"> <li>• Did not finish elementary school, finished elementary school, finished secondary school, finished college</li> </ul>
Father's education	<ul style="list-style-type: none"> <li>• Did not finish elementary school, finished elementary school, finished secondary school, finished college</li> </ul>
Number of years of residence in Catalonia or Catalan-speaking territory	<ul style="list-style-type: none"> <li>• Number of years</li> </ul>
B. Environmental variables related to language use and the participants' sociolinguistic environment	
Variable	Analysis
Use of Catalan and Spanish at home	<ul style="list-style-type: none"> <li>• Calculated based on the participants' answers to questionnaire items about the languages they spoke with parents and siblings</li> </ul>
Use of Catalan and Spanish in the participant's social network	<ul style="list-style-type: none"> <li>• Determined by asking the participants to list the 20 people with whom they had interaction inside and outside school, and in what language they interacted (Catalan, Spanish, Catalan and Spanish, and others)</li> </ul>
Use of Catalan and Spanish with peers	<ul style="list-style-type: none"> <li>• Constructed by asking the participants to mark out of the 20 people with whom they had the most interaction those who were their friends or in their classroom and what languages they used with them.</li> </ul>
Demolinguistic composition of the participant's classroom	<ul style="list-style-type: none"> <li>• Average use of Catalan and Spanish by the participant's classmates at home, in their social networks, and with peers.</li> </ul>



The data on language attitudes were obtained by asking participants to answer either a “yes” or “no” to a list of 10 statements each for Catalan and Spanish. The statements in the questionnaire (Appendix B) were used in Alsina et al. (1983) in the first comprehensive sociolinguistic study of language use in Catalan schools after the implementation of new language policies in the transition from dictatorship to democracy in Spain. The items and data analysis in Alsina et al. (1983) were based on a pioneering study of language attitudes toward Welsh by Sharp et al. (1973). The same items have been used extensively in previous studies on Catalan and Spanish language attitudes, and the same methodology for data coding was implemented in order to compare the results (e.g., Huguet, 2007; Ianos et al., 2017; Huguet et al., 2016; Madariaga et al., 2016; Ubalde et al., 2017). For instance, item 10 of the attitude section of the questionnaire was *M'agrada parlar en català*, “I like to speak in Catalan”, and participants had to circle *Sí*, “yes” or *No*, “No”. In accordance with previous research that used the same questionnaire, affirmative (yes) answers to the attitude items for each of the languages were assigned a value of 1, whereas negative (no) answers were assigned -1 (the values were reversed for negative statements). This resulted in an index between +10 and -10. Following Alsina et al. (1983) and the previous studies that used the same questionnaire items, attitude scores from +6.0 to +10.0 were considered *positive* attitudes, scores between -5.9 and + 5.9 were labeled *neutral* attitudes, and scores from -6.0 to -10.0 were referred to as *negative* attitudes. The data coding of all 10 statements for each language into one single score presupposes that the statements measure a unidimensional construct, although this may not be the case. Cronbach’s alpha for the items in the attitude section of the questionnaire for the current study was 0.77 for the Catalan attitude items and 0.78 for the Spanish attitude items.

The questionnaire collected information on the following individual variables: gender, student’s place of birth, origin of student’s parents, L1, mother’s education, father’s

education, and the student's number of years of residence in a Catalan-speaking area. The father's and mother's education was coded separately, because previous research has documented that the impact of each variable may be different (Marks, 2008). The environmental sociolinguistic variables were: use of Catalan and Spanish at home, use of Catalan and Spanish in the participant's social network, use of Catalan and Spanish with peers, and demolinguistic composition of the participant's classroom. The data for all the variables were obtained from the questionnaire, either directly from specific, single questions (e.g., gender, years of residence in Catalonia) or from indices that were calculated using several variables.

The four variables concerning the sociolinguistic environment of the participants are of particular relevance since they included four measures of language use that were not used in previous studies (section B in Table 2). All the indices for language use were between 0.00 and 1.00 and were constructed from specific questions in the questionnaire. The 0.00 value indicated no use of Catalan, whereas the 1.00 value indicated exclusive use of Catalan.

The use of Catalan and Spanish at home was an index based on the participant's answers to questionnaire items about the language they spoke with their parents and siblings (average of several items: language use with the father, the mother, and siblings, if they had any). The questionnaire also included items to consider the cases of separated, divorced, or other family situations.

The use of Catalan and Spanish in the participant's social network was obtained asking each participant to list up to 20 people with whom they interacted within and outside school and what language they used with them (Catalan, Catalan and Spanish, Spanish, or other) (Appendix B). The index was obtained assigning the following values for each language: Catalan = 1, Spanish = 0, Catalan and Spanish = 0.5) divided by the number of

people that were listed. The questionnaire asked about frequency of use of each language with each person, but this information was not considered for the data analysis.

The use of Catalan and Spanish with peers was the same as the previous index but it included only the people who were provided by the participants and were the participant's classmates or friends (for instance, it excluded the participant's soccer coach).

Finally, the impact of language use by the participants' classmates was investigated through three indices in connection with the classmates' language use in three environments: a) at home, b) in their social network, and c) with peers. Each index was calculated as the average use of a specific language (Catalan or Spanish) in the particular setting (home, social network, or with peers) by the members of a participant's classroom. The use of the language in question in a specific setting was first calculated and then divided by the number of students in a classroom. For instance, a student may have 0.90 as the index for use of Catalan and 0.10 for Spanish as measures of the participant's language use at home, indicating that they mostly use Catalan at home. At the same time, the same student, as a member of a specific classroom, may be assigned a measure of 0.20 for use of Catalan and one of 0,80 for use of Spanish in terms of the demolinguistic composition of the classroom, indicating that most of the student's classmates use Spanish at home.

A summary of the coding categories for individual and environmental sociolinguistic variables is presented in Table 2.

## **Data Analysis**

Two types of data analysis were carried out. On the one hand, descriptive (means; e.g., mean attitude toward Spanish at Time 1, at Time 2, and at Time 3; correlations; e.g., correlation between attitude and language use at home) and inferential tests were performed

to investigate the general trends in attitudes and how individual and environmental variables were connected to attitude (categorical variables were analyzed using the Kruskal-Wallis test). On the other hand, longitudinal mixed models were used for the dependent variables: attitude toward Catalan, attitude toward Spanish, and the difference between them, by time period (Time 1, Time 2, Time 3), considering the repeated measures of each participant. For the longitudinal mixed models, the difference between attitude toward Catalan and Spanish was computed for each participant, and the results are presented to describe the difference between attitudes toward Catalan and Spanish across time period (Time 1, Time 2 and Time 3) as an independent variable. In such models, there is no multicollinearity, since the model considers the different effects one by one and observes their evolution. For the categorical variables, the effect of each category was estimated in contrast to the reference category (REF). The estimated differences and 95% confidence intervals of the dependent variable were obtained. The  $p$  values were adjusted using the Tukey correction for multiple comparisons. The significance level was fixed at 5%. To describe the effect of each explanatory variable (individual and environmental), longitudinal mixed models with each independent variable and time period (Time 1, Time 2, and Time 3) were established, and estimated parameters and standards errors of the parameters were obtained. The analysis was carried out using SAS software version 9.4 (SAS Institute Inc., Cary, NC, USA).

## **Results**

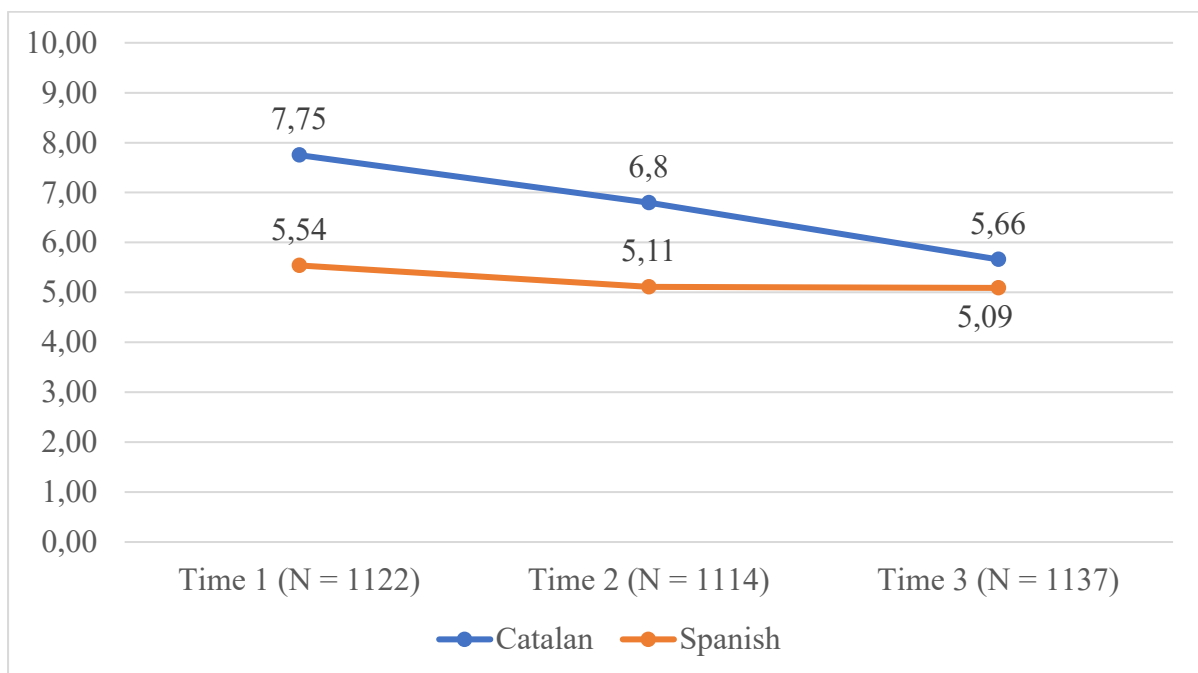
This section provides results, first, on the overall longitudinal development of attitudes toward Catalan and Spanish, and, second, on the impact of the individual and environmental variables associated with language attitudes.

The overall results obtained from the analysis of the means of attitudes for Catalan and Spanish showed that attitudes toward the two languages were positive or neutral and in

no case negative (Figure 1). The results showed that the participants had positive attitudes (i.e., between +6.00 and +10.0) toward Catalan at Time 1 and Time 2 ( $M = 7.75$ ,  $SD = 2.97$  at Time 1;  $M = 6.80$ ,  $SD = 3.92$  at Time 2) and neutral (i.e., between -5.9 and +5.9) at Time 3 ( $M = 5.66$ ,  $SD = 4.15$ ). Results for attitude toward Spanish showed that they were neutral at all times (Time 1,  $M = 5.54$ ,  $SD = 4.04$ ; Time 2,  $M = 5.11$ ,  $SD = 4.70$ ; Time 3,  $M = 5.09$ ,  $SD = 4.88$ ).

**Figure 1**

*Longitudinal Development of Attitudes Toward Catalan and Spanish at Time 1, Time 2, and Time 3 (mean for each time).*



Results from the longitudinal mixed models showed that there were significant differences between Catalan attitudes at all three times (Table 3). Regarding attitudes toward Spanish, statistically significant differences were found between Time 1 and Time 2, and between Time 1 and Time 3 (Table 4).

**Table 3**

*Estimated Differences in the Attitude Toward Catalan from the Longitudinal Mixed Model*

Attitude toward Catalan		Differences					
		Estimate	Standard error	<i>t</i> Value	Adj <i>p</i> -value	CI	
Time 1	Time 2	0.95	0.12	7.96	< .0001	0.67	1.23
Time 1	Time 3	2.06	0.12	17.37	< .0001	1.78	2.34
Time 2	Time 3	1.11	0.12	9.34	< .0001	0.83	1.39

**Table 4***Estimated Differences in the Attitude Toward Spanish from the Longitudinal Mixed Model*

Attitude toward Spanish		Differences					
		Estimate	Standard error	<i>t</i> Value	Adj <i>p</i> -value	CI	
Time 1	Time 2	0.41	0.14	3.01	.0075	0.09	0.73
Time 1	Time 3	0.45	0.14	3.33	.0025	0.13	0.77
Time 2	Time 3	0.04	0.14	0.3	.9504	-0.28	0.36

The estimated difference of attitude toward Catalan and toward Spanish was 2.18 at Time 1, 1.65 at Time 2, and 0.56 at Time 3. An analysis of the difference of attitude values toward Catalan and Spanish revealed a significant difference ( $F = 39.95, p < .0001$ ) between the two values for each time period considered. Specifically, all the pairwise comparisons between the times were statistically significant (Table 5).

**Table 5**

*Longitudinal Differences Between the Attitudes Toward Catalan and Spanish at Three Different Times*

Difference in attitude Catalan- Spanish		Differences					
		Estimate	Standard error	<i>t</i> Value	Adj <i>p</i> - value	CI	
Time 1	Time 2	0.53	0.19	2.87	.0116	0.10	0.97
Time 1	Time 3	1.62	0.18	8.76	< .0001	1.19	2.05
Time 2	Time 3	1.09	0.19	5.86	< .0001	0.65	1.52

The results on the impact of the individual and environmental variables when considered separately showed that most of the variables had a significant impact on the attitudes toward Catalan and Spanish (Tables 6 and 7). Most of the differences were maintained at Time 1, Time 2, and Time 3 (last column of Tables 6 and 7). In general, the results from Table 6 show that the participant profile displaying the highest attitude for Catalan was a female, L1 Catalan, born in a Catalan-speaking area, with parents born in a Catalan-speaking area, with parents who have a university degree (Table 6). The profile with a high attitude toward Spanish was a female, Spanish L1, born outside a Catalan-speaking territory, with parents born in Spain (outside Catalonia), and with parents who finished primary education (Table 7).

The correlations of the mean attitude values for Catalan and Spanish with the years of residence in Catalonia or in a Catalan-speaking territory were very low and non-significant (Tables 6 and 7). The correlations of the mean attitude values for Catalan and Spanish with the environmental variables (individual use and classroom configuration) were moderate

(above .30) for both Catalan and Spanish in the case of individual use of the languages at home, in the participants' social networks, and with peers. The correlations of attitude with the values of the demolinguistic composition of the classroom were low for Catalan and Spanish at all times except for the case of Spanish at Time 3, which were moderate (Tables 6 and 7).



**Table 6**

*Attitude Toward Catalan (Mean, from -10 to +10) and its Relationship With Individual and Environmental Variables*

Variable	Category	Attitude at Time 1 (M = 7.75)	Attitude at Time 2 (M = 6.80)	Attitude at Time 3 (M = 5.66)	Statistical significance
<b>Categorical</b>					
Gender	Male	7.44	6.48	4.93	T1* ( $\chi^2 = 11.55$ , p = 0.0007), T2* ( $\chi^2 = 5.55$ , p = 0.0184), T3* ( $\chi^2 = 18.84$ , p < .0001)
	Female	8.02	7.06	6.29	
Place of birth	Catalan-speaking territories (CST)	7.92	6.98	5.78	T1* ( $\chi^2 = 18.21$ , p < .0001), T2* ( $\chi^2 = 16.09$ , p < .0001), T3* ( $\chi^2 = 9.52$ , p = 0.0020)
	Outside CST	6.25	5.13	4.68	
Origin of parents	Parents born in CST	7.95	7.11	5.94	T1* ( $\chi^2 = 14.74$ , p = 0.0006), T2* ( $\chi^2 = 31.57$ , p < .0001), T3* ( $\chi^2 = 30.75$ , p < .0001)
	Parents born in the rest of Spain	7.08	5.50	3.91	
	Parents born outside Spain	6.96	5.63	5.22	
L1	Catalan	8.71	8.37	7.32	T1* ( $\chi^2 = 98.78$ , p < .0001), T2* ( $\chi^2 = 167.35$ , p < .0001), T3* ( $\chi^2 = 177.50$ , p < .0001)
	Catalan and Spanish	7.69	6.47	5.23	
	Spanish	6.84	5.30	3.84	
	Other languages and combinations	6.81	5.60	5.96	
Mother's education	Did not finish primary education	7.36	6.50	6.13	T1* ( $\chi^2 = 13.50$ , p = 0.0037), T2* ( $\chi^2 = 18.89$ , p = 0.0003), T3* ( $\chi^2 = 30.17$ , p < .0001)
	Finished primary education	7.19	6.31	4.93	

Variable	Category	Attitude at Time 1 ( $M = 7.75$ )	Attitude at Time 2 ( $M = 6.80$ )	Attitude at Time 3 ( $M = 5.66$ )	Statistical significance
	Finished secondary education	7.67	6.59	5.38	
	Finished a university degree	8.18	7.37	6.34	
Father's education	Did not finish primary education	7.31	6.45	5.37	T1 ( $\chi^2 = 4.48, p = 0.2140$ ), T2 ( $\chi^2 = 3.90, p = 0.2722$ ), T3* ( $\chi^2 = 16.5186, p = 0.0009$ )
	Finished primary education	7.38	6.72	5.18	
	Finished secondary education	7.70	6.74	5.45	
	Finished a university degree	8.13	7.14	6.33	
Continuous					
Years of residence in Catalonia or Catalan-speaking territory		Years, $M = 5.70, SD = 3.42, r = 0.15, p = 0.09$	Years, $M = 6.50, SD = 3.33, r = 0.06, p = 0.53$	Years, $M = 9.09, SD = 3.36, r = 0.06, p = 0.50$	
Use of Catalan at home		$M$ use = 0.51, $SD = 0.41, r = 0.32, p < .0001$	$M$ use = 0.49, $SD = 0.42, r = 0.37, p < .0001$	$M$ use = 0.48, $SD = 0.43, r = 0.41, p < .0001$	
Use of Catalan in social network		$M$ use = 0.51, $SD = 0.37, r = 0.29, p < .0001$	$M$ use = 0.49, $SD = 0.38, r = 0.37, p < .0001$	$M$ use = 0.48, $SD = 0.38, r = 0.42, p < .0001$	
Use of Catalan with peers		$M$ use = 0.51, $SD = 0.40, r = 0.26, p < .0001$	$M$ use = 0.48, $SD = 0.40, r = 0.35, p < .0001$	$M$ use = 0.48, $SD = 0.39, r = 0.40, p < .0001$	
Catalan at home, demolingustic composition of the classroom		$M$ use = 0.46, $SD = 0.22, r = 0.18, p < .0001$	$M$ use = 0.45, $SD = 0.20, r = 0.18, p < .0001$	$M$ use = 0.45, $SD = 0.20, r = 0.18, p < .0001$	

Variable	Category	Attitude at Time 1 ( $M = 7.75$ )	Attitude at Time 2 ( $M = 6.80$ )	Attitude at Time 3 ( $M = 5.66$ )	Statistical significance
Catalan in the social network, demolinguistic composition of the classroom		$M$ use = 0.46, $SD = 0.28$ , $r = 0.18$ , $p < .0001$	$M$ use = 0.46, $SD = 0.26$ , $r = 0.21$ , $p < .0001$	$M$ use = 0.46, $SD = 0.26$ , $r = 0.21$ , $p < .0001$	
Catalan with peers, demolinguistic composition of the classroom		$M$ use = 0.47, $SD = 0.30$ , $r = 0.18$ , $p < .0001$	$M$ use = 0.46, $SD = 0.29$ , $r = 0.21$ , $p < .0001$	$M$ use = 0.46, $SD = 0.29$ , $r = 0.21$ , $p < .0001$	

*Note.* On the Statistical significance column, an asterisk (\*) next to T (Time) means that there was a significant difference between the variables under study at Time 1, 2, or 3 (e.g., T1\* indicates that there was a significant difference between males and females (gender) regarding attitude toward Catalan at Time 1; the same applies to Time 2 and Time 3).

**Table 7**

*Attitude Toward Spanish (Mean, from -10 to +10) and its Relationship with Individual and Environmental Variables*

Variable	Category	Attitude at Time 1 (M = 5.54)	Attitude at Time 2 (M = 5.11)	Attitude at Time 3 (M = 5.09)	Statistical significance
<b>Categorical</b>					
Gender	Male	5.15	4.59	4.41	T1* ( $\chi^2 = 7.12$ , p = 0.0076), T2* ( $\chi^2 = 7.21$ , p = 0.0072), T3* ( $\chi^2 = 8.63$ , p = 0.0033)
	Female	5.88	5.55	5.68	
Place of birth	Catalan-speaking territories (CST)	5.50	5.00	4.98	T1 ( $\chi^2 = 0.31$ , p = 0.5777), T2 ( $\chi^2 = 3.42$ , p = 0.0642), T3* ( $\chi^2 = 5.29$ , p = 0.0213)
	Outside CST	5.90	6.14	6.10	
Origin of parents	Parents born in CST	5.31	4.72	4.73	T1* ( $\chi^2 = 15.12$ , p = 0.0005), T2* ( $\chi^2 = 31.94$ , p < .0001), T3* ( $\chi^2 = 24.21$ , p < .0001)
	Parents born in the rest of Spain	7.01	7.24	6.90	
	Parents born outside Spain	5.93	6.08	6.13	
L1	Catalan	3.71	2.82	2.71	T1* ( $\chi^2 = 29.02$ , p < .0001), T2* ( $\chi^2 = 20.20$ , p = 0.0025), T3* ( $\chi^2 = 64.67$ , p < .0001)
	Catalan and Spanish	6.50	6.55	6.45	
	Spanish	7.29	7.07	7.20	
	Other languages and combinations	5.39	5.65	5.54	
Mother's education	Did not finish primary education	5.19	5.85	5.79	T1* ( $\chi^2 = 24.45$ , p < .0001), T2* ( $\chi^2 = 19.06$ , p = 0.0003), T3* ( $\chi^2 = 54.60$ , p < .0001)
	Finished primary education	6.47	6.33	7.04	

Variable	Category	Attitude at Time 1 ( $M = 5.54$ )	Attitude at Time 2 ( $M = 5.11$ )	Attitude at Time 3 ( $M = 5.09$ )	Statistical significance
	Finished secondary education	5.90	5.47	5.64	
	Finished a university degree	4.63	4.25	3.75	
Father's education	Did not finish primary education	5.59	6.26	6.02	T1* ( $\chi^2 = 18.23, p = 0.0004$ ), T2 ( $\chi^2 = 7.77, p = 0.0509$ ), T3* ( $\chi^2 = 26.91, p < .0001$ )
	Finished primary education	6.43	5.77	6.16	
	Finished secondary education	5.71	5.23	5.50	
	Finished a university degree	4.73	4.50	4.02	
Continuous					
Years of residence in Catalonia or Catalan-speaking territory		Years, $M = 5.70, SD = 3.42, r = 0.03, p = 0.72$	Years, $M = 6.50, SD = 3.33, r = -0.01, p = 0.90$	Years, $M = 9.09, SD = 3.36, r = -0.07, p = 0.40$	
Use of Spanish at home		$M$ use = 0.43, $SD = 0.41, r = 0.40, p < .0001$	$M$ use = 0.45, $SD = 0.41, r = 0.41, p < .0001$	$M$ use = 0.46, $SD = 0.42, r = 0.44, p < .0001$	
Use of Spanish in social network		$M$ use = 0.46, $SD = 0.37, r = 0.38, p < .0001$	$M$ use = 0.48, $SD = 0.38, r = 0.38, p < .0001$	$M$ use = 0.52, $SD = 0.38, r = 0.47, p < .0001$	
Use of Spanish with peers		$M$ use = 0.47, $SD = 0.39, r = 0.35, p < .0001$	$M$ use = 0.49, $SD = 0.39, r = 0.35, p < .0001$	$M$ use = 0.52, $SD = 0.39, r = 0.46, p < .0001$	
Spanish at home, demolinguisic composition of the classroom		$M$ use = 0.46, $SD = 0.20, r = 0.27, p < .0001$	$M$ use = 0.47, $SD = 0.20, r = 0.26, p < .0001$	$M$ use = 0.47, $SD = 0.19, r = 0.32, p < .0001$	

Variable	Category	Attitude at Time 1 ( $M = 5.54$ )	Attitude at Time 2 ( $M = 5.11$ )	Attitude at Time 3 ( $M = 5.09$ )	Statistical significance
Spanish in the social network, demolinguiistic composition of the classroom		$M$ use = 0.50, $SD = 0.26$ , $r = 0.27$ , $p < .0001$	$M$ use = 0.52, $SD = 0.26$ , $r = 0.26$ , $p < .0001$	$M$ use = 0.52, $SD = 0.26$ , $r = 0.32$ , $p < .0001$	
Spanish with peers, demolinguiistic composition of the classroom		$M$ use = 0.51, $SD = 0.30$ , $r = 0.26$ , $p < .0001$	$M$ use = 0.52, $SD = 0.29$ , $r = 0.26$ , $p < .0001$	$M$ use = 0.53, $SD = 0.29$ , $r = 0.32$ , $p < .0001$	

*Note.* On the Statistical significance column, an asterisk (\*) next to T (Time) means that there was a significant difference between the variables under study at Time 1, 2, or 3 (e.g., T1\* indicates that there was a significant difference between males and females (gender) regarding attitude toward Catalan at Time 1; the same applies to Time 2 and Time 3).

The results of the longitudinal mixed models on the impact of all variables on the attitudes toward Catalan and Spanish across time showed that both for Catalan and Spanish time period was a significant predictor: Type III test of fixed effects for Catalan,  $p < .0001$ ; for Spanish,  $p = .0213$ . For Catalan, significant differences were found for all time periods, whereas for Spanish significant differences were found between Time 1 and Time 2, and Time 1 and Time 3. All variables in the longitudinal mixed models were significant for attitude toward Catalan and toward Spanish except for the variable years of residence in Catalonia or in a Catalan-speaking territory (for both languages).

Focusing on attitudes toward Catalan, the longitudinal mixed model results revealed that the total variance ( $R$  squared) was quite high (above .56 for all variables) and that the environmental variables contributed more to positive attitudes toward Catalan than individual variables (Table 8). More specifically, those that contributed to an increase in attitude toward Catalan were use of Catalan by the participant in their social networks ( $\beta = 3.45$ ; i.e., an increase in the use of Catalan in the participant's social network resulted in the estimation of 3.45 times an increase in the attitude toward Catalan), use of Catalan by the participant at home ( $\beta = 3.27$ ), and use of Catalan with peers ( $\beta = 3.06$ ) (Table 8). In addition, the demolingistic composition of the participant's classroom had a large impact on the increase of Catalan attitudes ( $\beta$  values between 2.58 and 2.20). In contrast, the two following variables were the ones that contributed the most to a decrease in the attitude toward Catalan: origin of parents (born outside a Catalan-speaking territory,  $\beta = -1.52$ ) and participant's L1 (L1 Spanish,  $\beta = -1.14$ ).

### **Table 8**

#### *Linear Mixed Model Results for Attitude Toward Catalan*

Variable	Category	$\beta$ estimate
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Gender	Male	REF
	Female	0.85 ( <i>SE</i> = .17)
Place of birth	Catalan-speaking territories (CST)	REF
	Outside CST	-1.52 ( <i>SE</i> = .28)
Origin of parents	Parents born in CST	1.05 ( <i>SE</i> = .27)
	Parents born in the rest of Spain	-0.46 ( <i>SE</i> = .37)
	Parents born outside Spain	REF
L1	Catalan	1.67 ( <i>SE</i> = .23)
	Catalan and Spanish	REF
	Spanish	-1.14 ( <i>SE</i> = .23)
	Other languages and combinations	-0.32 ( <i>SE</i> = .35)
Mother's education	Did not finish primary education	-0.85 ( <i>SE</i> = .41)
	Finished primary education	-1.04 ( <i>SE</i> = .27)
	Finished secondary education	-0.78 ( <i>SE</i> = .18)
	Finished a university degree	REF
Father's education	Did not finish primary education	-0.43 ( <i>SE</i> = .38)
	Finished primary education	-0.62 ( <i>SE</i> = .26)
	Finished secondary education	-0.49 ( <i>SE</i> = .18)
	Finished a university degree	REF
Years of residence in Catalonia or Catalan-speaking territory		0.09 ( <i>SE</i> = .07)
Use of Catalan at home		3.27 ( <i>SE</i> = .18)
Use of Catalan in social network		3.45 ( <i>SE</i> = .19)
Use of Catalan with peers		3.06 ( <i>SE</i> = .18)
Catalan, demolinguistic composition of the participant's classroom (at home)		2.58 ( <i>SE</i> = .38)
Catalan, demolinguistic composition of the participant's classroom (in social networks)		2.47 ( <i>SE</i> = .30)
Catalan, demolinguistic composition of the participant's classroom (with peers)		2.20 ( <i>SE</i> = .27)

Regarding attitude toward Spanish, the total variance (*R* squared) was quite high (above .64 for all variables), and the environmental variables contributed more to the development of attitudes toward Spanish than the individual ones (Table 9). More specifically, those that contributed the most to an increase in attitude toward Spanish were the use of Spanish at home in the participant's classroom ( $\beta = 5.55$ ), use of Spanish by the



participant in their social network ( $\beta = 4.53$ ), and use of Spanish in the classroom's social networks ( $\beta = 4.26$ ). The variables that contributed to a decrease of attitude toward Spanish were the participant's L1 (L1 Catalan,  $\beta = -3.41$ ) and origin of the participant's parents (born in a Catalan-speaking territory ( $\beta = -1.09$ )).

**Table 9**

*Linear Mixed Model Results for Attitude Toward Spanish*

Variable	Category	$\beta$ estimate
Gender	Male	REF
	Female	0.98 ( <i>SE</i> = .22)
Place of birth	Catalan-speaking territories (CST)	REF
	Outside CST	0.86 ( <i>SE</i> = .36)
Origin of parents	Parents born in CST	-1.09 ( <i>SE</i> = .35)
	Parents born in the rest of Spain	1.04 ( <i>SE</i> = .47)
	Parents born outside Spain	REF
L1	Catalan	-3.41 ( <i>SE</i> = .28)
	Catalan and Spanish	REF
	Spanish	0.69 ( <i>SE</i> = .28)
	Other languages and combinations	-1.00 ( <i>SE</i> = .42)
Mother's education	Did not finish primary education	1.25 ( <i>SE</i> = .50)
	Finished primary education	2.34 ( <i>SE</i> = .33)
	Finished secondary education	1.47 ( <i>SE</i> = .23)
	Finished a university degree	REF
Father's education	Did not finish primary education	1.31 ( <i>SE</i> = .46)
	Finished primary education	1.46 ( <i>SE</i> = .32)
	Finished secondary education	1.01 ( <i>SE</i> = .23)
	Finished a university degree	REF
Years of residence in Catalonia or Catalan-speaking territory		-0.02 ( <i>SE</i> = .07)
Use of Spanish at home		4.23 ( <i>SE</i> = .22)
Use of Spanish in social network		4.53 ( <i>SE</i> = .23)
Use of Spanish with peers		3.93 ( <i>SE</i> = .22)
Spanish, demolinguistic composition of the participant's classroom (at home)		5.55 ( <i>SE</i> = .48)
Spanish, demolinguistic composition of the participant's classroom (in social networks)		4.26 ( <i>SE</i> = .37)
Spanish, demolinguistic composition of the participant's classroom (with peers)		3.77 ( <i>SE</i> = .33)

## Discussion

This study attempted to answer two research questions regarding the longitudinal development of the language attitudes of youth toward Catalan and Spanish over a period of five years and the impact of individual and environmental variables on the development of attitudes.

The first research question investigated the overall language attitudes toward Catalan and Spanish at the end of primary and secondary education. The results showed that at the end of elementary education, language attitudes toward Catalan were positive and quite high, whereas at the end of secondary education, five years later, they were neutral and had decreased. Regarding language attitudes toward Spanish, they were neutral at the end of elementary education, and although they significantly decreased they stayed in the neutral category over the years. These results agree with previous studies in that, in general, attitudes toward Catalan tend to be more positive than attitudes toward Spanish among the youth group in Catalonia, a result that is commonly explained by the predominant role of Catalan in primary and secondary education and the language policy measures implemented for the spread of Catalan (Madariaga et al., 2016; Ianos et al., 2017; Ubalde et al., 2017).

These results contrast with those reported in early studies of attitudes in Catalonia by Woolard (2009, 2011) and Newman et al. (2008) in that attitudes toward Catalan did not stay positive over time in the current study. The results from this study also contrast with more recent research, such as Madariaga et al.'s study (2016), which performed a cross-sectional study of second- and fourth-year secondary school students in Catalonia and showed that attitudes toward Catalan stayed positive. Such differences are not easy to account for because the sample sizes, geographical areas under study, time periods, and methodologies are different. Further research needs to investigate more in depth the evolution of attitudes toward Catalan and Spanish in longitudinal studies in order to confirm the current results.

The results from the current study regarding the development of language attitudes among the youth population in Catalonia showed that language attitudes are still in flux in the transition from primary to secondary education and in secondary education (ages 11–16), which confirms that language attitude is a dynamic construct that is mediated by several individual and environmental variables (Baker, 1992; Dragojevic et al., 2021). The longitudinal results suggest greater changes in the attitudes toward Catalan than in the attitudes toward Spanish, since there were significant differences between the three time periods for Catalan, but for Spanish significant differences were only found between Time 1 and Time 2 (transition from primary to secondary) and Time 1 and Time 3. These results suggest that attitudes toward Spanish may be shaped in primary education and in the transition to secondary, and that during the secondary school period they become stable, whereas attitudes toward Catalan might be in flux (and decline) across the years. Such trends might be connected to the different impact of the transition from elementary to secondary education for Catalan or Spanish. Whereas attitudes for Catalan and Spanish are different at the end of elementary education (Time 1) (7.75 for Catalan, 5.54 for Spanish), they become more similar as students enter secondary education (Time 2) and during secondary education (Time 2, Time 3). Despite language policy measures favoring Catalan, attitudes toward Spanish may be stronger than those toward Catalan, and hence more stable, because of the status of Spanish (co-official in Catalonia), its worldwide instrumental value, and it being the L1 for many of the immigrant-origin students (Ianos et al., 2017). Furthermore, students often have to change schools in their transition from primary to secondary education, and they may have to establish new social networks and adopt new sociolinguistic roles (e.g., increase the use of Spanish because there are more Spanish-speaking classmates at high school than in elementary school), which can have an impact on the dynamics of attitudes. For instance, a study based on the same participants as the current study found that about 25% of the

participants modified their language use in their transition from primary to secondary school (13.8% increased their use of Spanish, whereas 11.1% increased their use of Catalan), suggesting that the transition from primary to secondary school is an important juncture for language use (Vila et al., 2020).

The second research question regarded the individual and environmental factors that account for the changes in language attitudes toward Catalan and Spanish. The results of the study showed that the variables that account for attitude development are mostly connected to the participants' sociolinguistic environment (use of languages with the family, friends, peers, and the classroom demolinguistic composition) rather than their individual characteristics. Contrary to previous studies (e.g., Madariaga et al., 2016), in the current study, the place of birth of the participants did not seem to have as much of an impact in the explanation of attitude development ( $\beta$  estimate for Catalan = -1.52; for Spanish = 0.86, Tables 8 and 9, respectively).

These results point to the importance of the sociolinguistic environment in shaping language attitudes, i.e., the use of Catalan at home, in social networks, and with peers (Tables 6-9) and confirm the prominent role of environmental variables for the development of language attitudes (Baker, 1992; Lasagabaster, 2014). The results also suggest that measures to counterbalance the language use situation of Catalan and Spanish in Catalonia in order for the student population to attain similar levels of linguistic competence and use in both languages, particularly in school settings, need to adopt a holistic approach rather than an individualistic one. In this sense, initiatives such as reception classes for immigrant-origin students and environment education plans were successful in Catalonia because they adopted a systemic approach (Vila et al., 2009; Vila et al., 2013). This is a reminder that social constructs like language attitudes are affected both by individual as well as social and economic factors. Thus, the goal of balancing the language attitudes toward Catalan and

Spanish necessarily needs to be approached from an interdisciplinary sociolinguistic perspective.

The results of this study provide evidence that the variables connected to language use in the sociolinguistic environment (in the youth's home or social network and with peers) have a larger impact on attitude development than individual characteristics, except for the participants' L1. Ubalde et al. (2017) showed that the participants' L1 did not have a significant effect on predicting the youth's group memberships, but rather variables such as ethnonational identification and language confidence played a larger role than L1. In the current study, L1 was an important predictor of attitude development, particularly in the case of attitude toward Spanish, in which having Catalan as the L1 had an important effect in the decrease of attitude toward Spanish ( $\beta = -3.41$ , Table 8), compared to the decrease of attitude toward Catalan by L1 Spanish participants ( $\beta = -1.14$ , Table 9). These results indicate that although attitudes toward Spanish are stable longitudinally, some L1 Catalan participants develop less positive attitudes toward Spanish with time. Such results are connected to what Baker (1992, p. 108) referred to as *bunker attitudes*; that is, when minority language bilinguals highly value their language and see the majority language as a threat to the minority one. As argued by Lasagabaster (2014, 2017) in reference to attitudes toward Basque, youth with Basque as their L1 and attending the school model with the highest presence of Basque are those that have the lowest attitude toward Spanish, the majority language. Further research needs to investigate this finding in the context of Catalonia and examine to what extent it is connected with specific geographical areas where Catalan is more present than Spanish or with ethnonational identification by youth as they enter into adolescence.

Finally, two limitations of the current study need to be acknowledged. First, the data were collected during the 2009–2012 period, and thus may be outdated. However, the

longitudinal data from more than 1,000 youth in Catalonia documents an important trend in language attitudes in a multilingual setting that may help understand some of the current developments in Catalan sociolinguistics, such as the sharp decline in the use of Catalan in the fourth year of secondary schooling in Catalonia that has taken place in the last 15 years: from Catalan being used by 68% of the students when working in groups in the classroom in 2006 to 21% in 2021 (Consell Superior d'Avaluació del Sistema Educatiu de Catalunya, 2021). In light of the results from our study, the current decrease in the use of Catalan in school settings in Catalonia may be the tip of the iceberg of changes that have been developing for more than a decade. Further research is needed to confirm this hypothesis and investigate how individual language attitudes and societal characteristics interact.

Second, even though the sampling of the study attempted to replicate youth populations from different sociolinguistic environments, the results cannot be generalized to the entire youth population of the Catalan-speaking territories or even Catalonia because the sample was not statistically representative of Catalonia as a whole (e.g., participants with Catalan as their L1 were overrepresented). Furthermore, the data was not analyzed according to the different geographical areas where the participating schools were located, which may be an interesting variable for further study. In this respect, further research needs to investigate how current changes in demographics, youth culture (hybridity, access to global media, etc.), and politics in the Catalan-speaking areas affect the development of attitudes both at the macro and micro levels.

### **Conclusion**

This study examined the longitudinal development of student language attitudes towards Catalan and Spanish in a large sample of youth as they transitioned from primary to secondary education and throughout their secondary period. By spanning a five-year

timeframe, this study provided a comprehensive analysis of how language attitudes evolve in a multilingual setting where both Catalan and Spanish are present. The findings of the study revealed significant and non-parallel changes in language attitudes towards Catalan and Spanish over time.

In particular, the study highlighted the influence of environmental factors on the longitudinal development of language attitudes, emphasizing the importance of considering language use within students' families, social networks, and peer groups, both inside and outside of school. These results underscore the need for educational interventions that address language dynamics and its connection with language use among students. The study underscores the pivotal role of early teenage years in shaping language attitudes and emphasizes the importance of examining attitudes at both individual and group levels. As noted by Baker (1992) three decades ago, the formation and development of attitudes in youth involve multiple interacting factors, a claim that is confirmed in this study with a large longitudinal sample and a different sociolinguistic environment from that of Wales.

Therefore, the initiatives introduced by the Catalan government and its Department of Education a few years ago for the development and implementation of an integrated language teaching model (Departament d'Educació, 2018) need to be supplemented with sociocultural initiatives. These initiatives should enable young students not only to study in Catalan and Spanish but also to actively encourage the use of Catalan and Spanish in interpersonal interaction in school environments and participate in youth culture in both languages. This task is not without challenges, as the status of Spanish as a global multimedia language may overshadow Catalan. Hence, it is imperative to continue studying language attitudes, particularly how they evolve during the youth period, and their relationship with current developments. This ongoing research will help us comprehend how languages coexist in

multilingual environments and how linguistic diversity can be preserved and promoted among youth groups.

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## Appendix A

*Demographic and Sociolinguistic Characteristics of the Geographical Areas from which the Sample was Extracted. Sources: Bretxa and Vila (2014), Sorolla (2016), and Authors (2013)*

Region	Area	Percentage of population in the area with Catalan as L1 (year 2013)	Percentage of the population in the area being able to speak Catalan (year 2011)	Location of schools and high schools (town, village)	Population of town/village (year 2013)
Catalonia	Barcelona metropolitan area	23.3 %	80.6 %	Sant Just Desvern	16,800
				Mataró	124,000
	Central Catalonia (Osona)	83 %	80 %	Sant Joan Despí	32,800
				Manlleu	20,400
	Western Catalonia (La Noguera)	53 %	76 %	Balaguer	16,600
				Vallfogona de Balaguer	1,877
				Térmens	1,548
				Os de Balaguer	1,015
				Camarasa	941
				Menàrguens	885
Aragon	La Franja	52.2 % (year 2014)	80.2 % (year 2014)	Fraga	14,834
				Tamarit de Llitera	3,626
				Saidí	1,797
				El Torricó	1,447
				Torrent de Cinca	1,241
				Albelda	794
				El Campell	724
				Vilella de Cinca	447
				Vensilló	443
				Castellonroi	342
				Miralsot	271
Estopanyà	144				
Barri de Llitera	185				

## Appendix B

### *Sample questionnaire items*

This appendix includes a sample of the questionnaire items in Catalan (with English translations by the authors of the study) that were used to obtain the data on a) language attitudes toward Spanish and Catalan, b) language use in the family environment (e.g., with parents), and c) language use in the participants' social network. The translations were not included in the questionnaire. For additional language use items (i.e., language used in day-to-day activities like reading, watching television, listening to music, playing video games, speaking with parents, siblings, friends, and so on, see Flors, 2017, pp. 577–581).

### *a) Language attitude questionnaire items*

A continuació llegiràs unes afirmacions sobre el català i castellà. Marca si hi estàs d'acord o en desacord marcant sí o no.

“Next, you will read some statements about Catalan and Spanish. Mark if you agree or disagree with them marking yes or no.”

Sobre el català... “About Catalan...”

1. Em sembla bé que tot els nois i noies de Catalunya estudiïn el català. SÍ NO  
“1. I approve of all the youth in Catalonia studying Catalan.”
2. És desagradable aprendre el català. SÍ NO  
“2. Learning Catalan is unpleasant.”
3. No serveix de res aprendre el català perquè segurament no el faré servir mai. SÍ NO  
“3. Learning Catalan is useless because I will probably never use it.”
4. Hauríem d'esforçar-nos per fer servir més el català. SÍ NO  
“4. We should make the effort to use Catalan more frequently.”
5. És més important aprendre anglès o francès que català. SÍ NO  
“5. It is more important to learn English or French than Catalan.”
6. M'agrada sentir parlar català. SÍ NO  
“6. I like to hear people speak Catalan.”
7. Visc a Catalunya i per això he de conèixer, estudiar i parlar el català. SÍ NO

“7. I live in Catalonia and for this reason, I need to know, study and speak Catalan.”

8. El català, només l’haurien d’estudiar els catalans. SÍ NO

“8. Catalan should only have to be studied by Catalan people.”

9. El català és una llengua que sona malament. SÍ NO

“9. Catalan is an ill-sounding language.”

10. M’agrada parlar en català. SÍ NO

“10. I like to speak in Catalan.”

Sobre el castellà... “About Spanish...”

1. El castellà és una llengua bonica. SÍ NO

“1. Spanish is a beautiful language.”

2. Tots els catalans han de saber parlar castellà. SÍ NO

“2. All the Catalan people need to know how to speak Spanish.”

3. El castellà només l’haurien d’aprendre i estudiar els qui el parlen. SÍ NO

“3. Spanish should only have to be learned and studied by those who speak it.”

4. M’agrada sentir parlar castellà. SÍ NO

“4. I like to hear people speak Spanish.”

5. A Catalunya s’haurien d’estudiar altres idiomes abans que el castellà. SÍ NO

“5. In Catalonia, languages other than Spanish should be studied.”

6. El català és més important que el castellà. SÍ NO

“6. Catalan is more important than Spanish.”

7. El castellà és una llengua fàcil d’aprendre. SÍ NO

“7. Spanish is an easy language to learn.”

8. És avorrit aprendre el castellà. SÍ NO

“8. Learning Spanish is boring.”

9. El castellà l’haurien d’ensenyar a tots els països. SÍ NO

“9. Spanish should be taught in all countries.”

10. Els catalans haurien de parlar menys castellà. SÍ NO

“10. Catalans should speak less Spanish.”

*b) Sample language use questionnaire items*

1. Quina llengua parles amb el teu pare? “1. What language do you speak with your father?”



1. Només o sobretot en català. "Only or mainly in Catalan."
  2. Igual en català que en castellà. "As much in Catalan as in Spanish."
  3. Només o sobretot en castellà. "Only or mainly in Spanish."
  4. En una altra llengua. Quina o quines? "In another language. Which one or ones?"
- 

2. Quina llengua parles amb la teva mare? "1. What language do you speak with your mother?"

1. Només o sobretot en català. "Only or mainly in Catalan."
  2. Igual en català que en castellà. "As much in Catalan as in Spanish."
  3. Només o sobretot en castellà. "Only or mainly in Spanish."
  4. En una altra llengua. Quina o quines? "In another language. Which one or ones?"
- 

c) *Language use in the participants' social networks*

**31** Pensa un moment en les coses que fas al llarg de la setmana (per exemple jugar amb els amics, activitats extraescolars, estar amb familiars, anar a escola/institut...). Escriu en la primera i la segona columnes de la taula el nom de les 20 persones amb qui més et relaciones. Un cop escrits els noms, respon les altres preguntes.

	Nom de la persona (sense cognoms)	Tipus de relació (amic, cosina, monitor...)	Ens relacionem...			En quina llengua parles tu amb aquesta persona?			
			Poc	Bastant	Molt	cat	cat=cast	cast	altres. Quines?
1			1	2	3	1	2	3	4 _____
2			1	2	3	1	2	3	4 _____
3			1	2	3	1	2	3	4 _____
4			1	2	3	1	2	3	4 _____
5			1	2	3	1	2	3	4 _____

31. Think for a moment in the things that you do during the week (for instance, playing with friends, extracurricular activities, being with relatives, going to school/high school...). Write in the first and the second columns of the table the name of the 20 people with whom you interact. Once you have written the names, answer the other questions.

- Name of the person (without last names)
- Type of relationship (friend, cousin, counselor...)
- We interact... Little, Quite a lot, A lot

- In what language do you speak to this person? Catalan, Catalan = Spanish, Spanish, Other. Which ones?